AMENDMENTS TO THE SPECIFICATION

On page 1, line 1, please delete the heading "DESCRIPTION" appearing before the title of the invention.

On page 1, line 5, after the title insert the following:

This application is the US national phase of international application **PCT/JP2005/001275**, filed **28 January 2005**, which designated the U.S. and claims priority of **JP 2004-023603**, filed **30 January 2004**, the entire contents of each of which are hereby incorporated by reference.

On page 1, line 6, please replace the heading "Technical Field" with the following amended heading:

~~Technical~~ Field <u>of the Invention</u>

On page 1, line 16, please replace the heading "Background Art" with the following amended heading:

Background ~~Art~~ <u>of the Invention</u>

On page 1, line 31, please replace the heading "Disclosure of the Invention" with the following amended heading:

~~Disclosure~~ <u>Summary</u> of the Invention

Please amend the paragraph beginning at line 29 of page 2 as follows:

~~Preferably, the~~ The relaxor ferroelectric solid solution single crystal ~~is made of a lead-based complex perovskite compound. The lead-based complex perovskite compound~~ may be made of ~~expressed as any of~~ $(1\text{-}x)Pb(Mg_{1/3}Nb_{2/3})O_3 \cdot xPbTiO_3$, ~~$(1\text{-}x)Pb(Zn_{1/3}Nb_{2/3})O_3 \cdot xPbTiO_3$, and $(1\text{-}x)Pb(In_{1/2}Nb_{1/2})O_3 \cdot xPbTiO_3$,~~ where x represents a composition ratio of $PbTiO_3$ in $(1\text{-}x)Pb(Mg_{1/3}Nb_{2/3})O_3 \cdot xPbTiO_3$ ~~the lead-based complex perovskite compound~~. Hereinafter $(1\text{-}x)Pb(Mg_{1/3}Nb_{2/3})O_3 \cdot xPbTiO_3$ will be abbreviated to PMN-PT~~, $(1\text{-}x)Pb(Zn_{1/3}Nb_{2/3})O_3 \cdot xPbTiO_3$ to PZN-PT, and $(1\text{-}x)Pb(In_{1/2}Nb_{1/2})O_3 \cdot xPbTiO_3$ to PIN-PT~~. The PMN-PT~~, PZN-PT and PIN-PT are~~ is capable of making transitions between the first state and second state within a range of the composition ratio x of between 0.1 and 0.2 (exclusive) by the application of an electric field.

Please amend the paragraph beginning at line 9 of page 3 as follows:

Variations in characteristics of PMN-PT ~~a lead-based complex perovskite compound~~ due to differences in the composition ratio x will be described below by citing PMN-PT~~, and the same applies to PZN-PT and PIN-PT~~. Fig. 2 is a graph showing temperature dependence of relative permittivity of approximately 100-μm-thick PMN-PT (001) plates which differ from each other in composition ratio x. The relative permittivity was measured by applying an AC electric field with a frequency of 10 kHz, 100 kHz, or 1 MHz to the PMN-PT (001) plates through electrodes attached to both sides of the PMN-PT (001) plates. The strength of the applied electric field was varied with the thickness of the measured plates, with the maximum electric field being 10 V/cm.

Please amend the paragraph beginning at line 18 of page 5 as follows:

As shown in Fig. 3(b), when the composition ratio x is 0.1 or below, the Curie temperature becomes 40°C or below, which is equal to or close to room temperature. When heated to or above the Curie temperature, the PMN-PT solid solution single crystal changes to a cubic crystalline phase in which it blocks optical transmission. Thus, when the Curie temperature is equal to or close to room temperature, even if the PMN-PT solid solution single crystal is caused by the application of an electric field above the threshold to make a transition to the state which has a low permittivity and allows optical transmission, it returns to the first state which blocks ~~allows~~ optical transmission, at a temperature equal to or close to room temperature. This hampers the memory effect. Thus, in order for the memory effect to be produced properly, it is preferable that the composition ratio x is larger than 0.1. In other words, in order for the memory effect to be produced properly, preferably the composition ratio x is set such that the Curie temperature will be higher than 40°C.

Please amend the paragraph beginning at line 22 of page 7 as follows:

Figs. 7(a) to 7(d) are ~~polarizing microscopes~~ polarized photomicrographs taken of the device body in the optical device according to example 1 with an electric field which changes unidirectionally from 0 kV/cm to 8.2 kV/cm being applied to the optical device;

Please amend the paragraph beginning at line 22 of page 8 as follows:

Figs. 17(a) to 17(d) are ~~polarizing microscopes~~ polarized photomicrographs taken of the device body in the optical device according to example 2 by applying an electric field which changes unidirectionally from 0 kV/cm to 11.7 kV/cm and then unidirectionally from 11.7 kV/cm to 0 kV/cm.

On page 8, line 28, please replace the heading "Best Mode for Carrying out the Invention" with the following amended heading:

~~Best Mode for Carrying out the Invention~~ Detailed Description of the Preferred Embodiments

Please amend the paragraph beginning at line 31 of page 19 as follows:

Conventional techniques which use light to store information include a magneto-optical disk. The magneto-optical disk stores information as a binary signal in a specific area on the medium by irradiating the specific area with a laser beam, thereby heating the irradiated specific area to or above the Curie temperature, and then applying an external magnetic field when coercivity ~~holding power~~ of the specific area lowers, thereby magnetizing the specific area upward or downward. In this way, with the magneto-optical disk, the magnetic field must be applied upward or downward distinctively after heating the specific area to or above the Curie temperature by irradiating it with a laser beam. On the other hand, if the optical device 10 is embodied as an optical memory, it is possible to switch between a state (ON) which allows optical transmission through a specific area and a state (OFF) which blocks optical

transmission, depending on whether or not the optical device 10 is heated to or above the Curie temperature.

Please delete the paragraph beginning at line 26 of page 20 as follows:

~~The device body 20 of the optical device 10 may be formed of PZN-PT or PIN-PT instead of PMN-PT.~~